National Environmental Laboratory **Accreditation** Conference

FIELD ACTIVITIES

Approved July 12, 2002
Effective July 1, 2004 unless otherwise noted

Note that the NELAC standards now have two significant dates: 1) the date the standards were approved at the annual meeting, and 2) the date the standards are effective and must be implemented. This is especially important as some portions of the standards have different effective dates. The approval date is part of the document control header on each page. The cover of each chapter shows both the approval date and the effective date. Changes approved for implementation at a time other than the effective date (on the chapter cover) are noted in the chapter, showing the approved text and its effective date.

TABLE OF CONTENTS

7.0 FIELD ACTIVITIES

INTRODUCTION

This chapter includes standards for sampling and field measurements which are not explicitly covered in other NELAC standards. Because of the use of temporary facilities, field equipment, and the effect of environmental conditions, field standards are necessary to ensure the adequacy of the resulting data.

7.1 GENERAL SAMPLING AND FIELD MEASUREMENT STANDARD

7.1.1 Scope

a) This standard specifies the general requirements for the competence to carry out sampling and field measurements. It is applicable to laboratories as well as non-laboratory organizations which directly perform environmental sampling and field measurements.

b) If more stringent standards or requirements are included in a mandated method or by regulation, the organization shall demonstrate that such requirements are met. If it is not clear which requirements are more stringent, the standard from the method or regulation is to be followed. If a Quality Assurance Project Plan is written for the project, that plan will be followed.

7.1.2 Technical records

Records shall include the identity of personnel responsible for sampling and field measurement. Observations, data, and calculations shall be recorded at the time they are made and shall be identifiable to the specific task (Reference Chapter 5).

7.1.3 Personnel

7.1.3.1 General Requirements for Field Staff

The organization shall use personnel who are employed by, or under contract to the organization. Where contracted and additional technical and key support personnel are used, the organization shall ensure that such personnel are supervised and competent and that they work in accordance with the organization's quality system.

a) The organization shall have sufficient personnel with the necessary education, training, technical knowledge and experience for their assigned functions.

b) All personnel shall be responsible for complying with all quality assurance/quality control requirements that pertain to their organizational/technical function.

c) Each technical staff member must have a combination of experience and education to adequately demonstrate a specific knowledge of their particular function and a general knowledge of field operations, test methods, quality assurance/quality control procedures and records management.

d) The management of the organization shall formulate the goals with respect to the education, training and skills of the assigned personnel. The organization shall have a policy and procedures for identifying training needs and providing training of personnel. The training program shall be relevant to the present and anticipated sampling and field measurement tasks of the organization.

    1) Defining the minimal level of qualification, experience and skills necessary for all sampling and field measurement positions in the organization.
    2) Ensuring that all technical staff have demonstrated capability in the activities for which they are responsible. Such demonstration shall be documented.
    3) Ensuring that the training of each member of the technical staff is kept up-to-date (on-going) by the following:

        i. Evidence must be on file that demonstrates that each employee has read, understood, and is using the latest version of the organization's in-house quality documentation, which relates to his/her job responsibilities.

        ii Training courses or workshops on specific equipment, techniques or procedures shall all be documented.

        iii Training courses in ethical and legal responsibilities including the potential punishments and penalties for improper, unethical or illegal actions. Evidence must also be on file, which demonstrates that each employee has read, acknowledged and understood their personal ethical and legal responsibilities including the potential punishments and penalties for improper, unethical or illegal actions.

        iv Personnel training shall be considered up to date if an employee training file contains a certification that technical personnel have read, understood and agreed to perform sampling and field measurements in accordance with the most recent version of the methods, standard operating procedures, and other supporting documents.

e) The management shall authorize and ensure the competence of specific personnel to perform particular types of sampling and field measurements. The organization shall maintain records of the relevant authorization(s), competence, educational and professional qualifications, training, skills and experience of all technical personnel, including contracted personnel. This information shall be readily available and shall include the date on which authorization and/or competence is confirmed.

7.1.4 Accommodation and Environmental Conditions

The sampling or field measurement team shall ensure that the field conditions do not invalidate the results or adversely affect the required quality of any measurement. The technical requirements for accommodation and field conditions that can affect the result of tests shall be documented.

7.1.5 Sampling and Field Measurement Methods

The organization shall use appropriate methods and procedures for all tests within its scope, including sampling, equipment decontamination, handling, transport, chain-of-custody, storage, and preservation of samples to be tested.

a) The organization shall use methods which meet the regulatory or other needs of the client and which are appropriate for the tests it undertakes. Sampling and field measurement methods published in international, regional, or national standards shall preferably be used.

b) The organization shall validate non-standard methods, in-house designed/developed methods, standard methods used outside their intended scope, and amplifications and modifications of standard methods to confirm that the methods are fit for the intended use.

7.1.6 Equipment and Supplies

a) The personnel shall be furnished with all items of equipment required for the correct performance of the sampling and field measurement activity. In those cases where the organization needs to use equipment outside its permanent control, it shall ensure that the requirements of this standard are met.

b) Equipment and its software used for sampling and field measurement shall be capable of achieving the accuracy required and shall comply with specifications relevant to the tests concerned. When received, sampling equipment and supplies shall be checked to establish that it meets the organization's specification requirements, complies with the relevant standard specifications, and shall be checked to ensure proper operation and/or calibrated before use.

7.1.7 Sampling and Field Measurement Procedures

a) The organization shall have a sampling plan and procedures for sampling and field measurement when it carries out sampling for subsequent testing. The sampling plan shall describe the matrix-specific sampling procedures as well as the selection, withdrawal and preparation of samples. The use of field blanks and other quality control samples shall also be included in the plan. The sampling plan as well as the sampling and field measurement procedure shall be available at the location where sampling or field measurement is undertaken. Sampling plans shall be based on communication with the client and, whenever appropriate for the project objectives, be based on applicable statistical methods. The sampling process shall address the factors to be controlled to ensure the validity of the tests.

b) Where the client requires deviations, additions or exclusions from the documented procedure, these shall follow procedures developed by the organization to document the changes and include them with the resultant data. This documentation shall be communicated to the client.

c) The organization shall have procedures for recording relevant data and operations relating to sampling that forms part of the testing that is undertaken. These records shall include the sampling procedure used, the identification of the sampler, environmental conditions (if relevant) and the diagrams or other equivalent means to identify the sampling location as necessary and, if appropriate, the statistics the sampling procedures are based upon.

d) The organization shall have procedures and information on storage and transport of samples, including information on sampling factors affecting the test result. These procedures shall be provided to those accepting and transporting samples.

7.1.8 Documentation

Field events shall be documented and shall include the following items as appropriate for the interpretation of test results. When necessary, this information shall be provided to the data user:

a) sampling/field measurement organization, including address, phone number, and email address;

b) printed name and signature of technician, plus names of all members of the sampling team;

c) sample type (grab, composite, etc.), including an identification of the matrix sampled; (aqueous, solids, etc.)

d) sample identification number including a unique field identification code for each sample container;

e) reason for sampling/measurement;

f) date and time of sampling/measurement;

g) location of sampling, including any diagrams, sketches, or photographs; name of sampling station, and/or latitude, longitude, and altitude when sample point is not otherwise identified;

h) for water sampling: the water level measure, sample depth, and water discharge rate measure if appropriate/required;

i) reference to the sampling plan and procedures used, including field blanks, spikes, duplicates, and if applicable, any confirmation samples; field instrument calibration, span, drift, and calibration standards; sampling system bias and response time; and field test standards and reagents as required by the standard/test method;

j) sample preservation, transportation, and storage, including a description of sample containers and chain of custody;

k) details of any conditions during sampling that may affect the interpretation of the test results;

l) any standard or other specification for the sampling method or procedure, and deviations, additions to or exclusions from the specification concerned; and

m) The organization collecting samples shall certify that samples and field measurements were collected in accordance with NELAC standards or provide reasons and/or justification if they were not.

7.2 FIELD MEASUREMENT STANDARD (WATER)

Field Measurement is done by an accredited laboratory or other accredited organization, e.g., an engineering consulting firm. Field Measurement can be, but is not limited to being:

a) Testing outside of a mobile laboratory, e.g. testing using self-powered instruments either hand-held or contained in personal backpacks, suitcases or other containers.

b) On-line monitoring that may include a fully enclosed structure with electrical power and an environmental control system critical to the protection of the instruments/analyzers and computers. Generally these units are configured to operate in the same location for a period of one day to several weeks.

c) Ambient air or NPDES discharge monitoring/sampling systems that collect and /or record data with electrically- operated instruments, usually contained in an environmental enclosure. These field measurement systems normally have a testing probe continuously exposed to the sampling matrix or medium being tested.

d) Measurements of:

1) Hydrogen ion (pH)
2) Dissolved Oxygen (DO)
3) Temperature
4) Total Chlorine Residual
5) Sulfite
6) Turbidity
7) Conductivity
8) Gaseous analytes
9) Secchi Transparency

e) Measurements from instruments/tests that provide nearly instantaneous results:

1) Electrometric tests
2) Colorimetric tests
3) Titrimetric tests
4) Gas Chromatography tests
5) UV, Non-dispersive Infrared, or Fluorescence tests

f) Measurements of any parameter where prescribing directives/methods indicate "immediate analysis" (no holding time) is required.

Appendix A - REFERENCES

ISO/IEC 17025:1999(E), “General Requirements for the Competence of Testing and Calibration Laboratories,” 1999.